

**solution**

# **Quickly Deploying a High-Availability RabbitMQ Cluster**

|              |            |
|--------------|------------|
| <b>Issue</b> | 1.0.0      |
| <b>Date</b>  | 2025-08-20 |



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# 1 Solution Overview

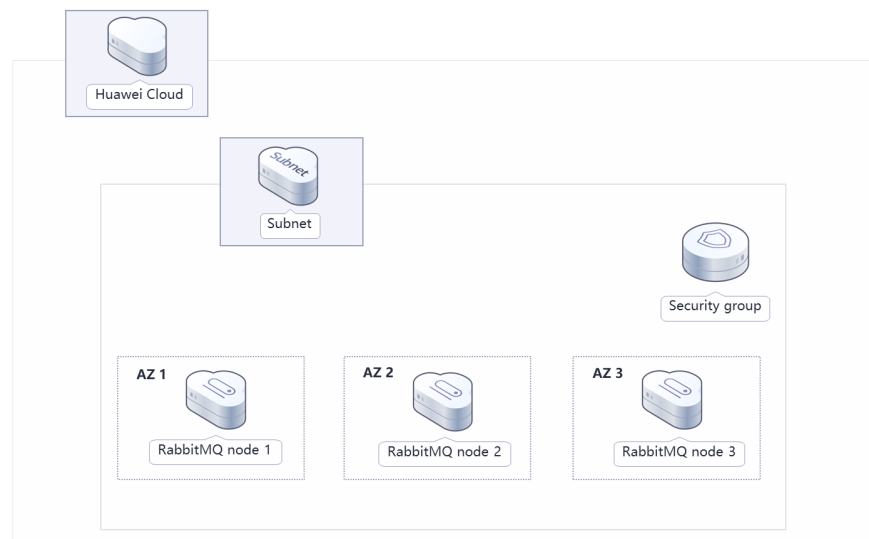
## Scenarios

You can easily create a high-availability **RabbitMQ** cluster on Huawei Cloud Elastic Cloud Servers (ECSs). RabbitMQ is open-source message-oriented middleware developed in Erlang to implement the Advanced Message Queuing Protocol (AMQP). It supports multiple programming languages.

## Solution Architecture

This solution helps you quickly create a RabbitMQ cluster on Huawei Cloud ECSs.

**Figure 1-1** Architecture



This solution will:

- Create three Linux ECSs, which will be deployed in different AZs to work as RabbitMQ nodes.

- Create three elastic IP addresses (EIPs), which will be used for internal and external communication.
- Create security groups, which secure the ECS environment by controlling access to ECSs.

## Advantages

- High availability  
ECSs are deployed across AZs to provide multi-AZ disaster recovery. Failover can be automated and data consistency can be ensured to the greatest possible extent.
- Easy deployment  
You can create ECSs running RabbitMQ with just a few clicks.
- Open source and customization  
This solution is open-source and free for commercial use. You can also make custom development according to the practical requirements.

## Constraints

- Before deploying this solution, you need to register with Huawei Cloud. Ensure that your account is not in arrears or frozen. You can estimate the total price according to [Table 2-1](#).
- After this solution is successfully deployed, it takes about 10 minutes to set up the RabbitMQ cluster. After the cluster is set up, you can verify the solution by referring to [3.3 Getting Started](#).

# 2 Resource Planning and Costs

This solution will deploy the resources listed in the following table. The costs are only estimates and may differ from the final prices. For details, see [pricing details](#).

**Table 2-1** Resource and cost planning (yearly/monthly)

| Huawei Cloud Service       | Example Configuration                                                                                                                                                                                                                                                                                                                                  | Estimated Monthly Cost        |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Elastic Cloud Server (ECS) | <ul style="list-style-type: none"><li>• Region: AP-Singapore</li><li>• Billing Mode: Yearly/Monthly</li><li>• CPU Architecture: x86</li><li>• Type: General computing   s6.medium.2   1 vCPU   2 GB</li><li>• Image: CentOS 7.6 64bit</li><li>• System Disk: High I/O   40 GiB</li><li>• Data Disk: High I/O   100 GiB</li><li>• Quantity: 3</li></ul> | \$28.18 USD x 3 = \$84.54 USD |
| Elastic IP (EIP)           | <ul style="list-style-type: none"><li>• Region: AP-Singapore</li><li>• Billing Mode: Yearly/Monthly</li><li>• Product Type: Dedicated</li><li>• Routing Type: Dynamic BGP</li><li>• Billed By: Bandwidth</li><li>• Bandwidth: 5 Mbit/s</li><li>• Quantity: 3</li></ul>                                                                                 | \$57 USD x 3 = \$171.00 USD   |
| Total                      |                                                                                                                                                                                                                                                                                                                                                        | \$255.54 USD                  |

Table 2-2 Resource and cost planning (pay-per-use)

| Huawei Cloud Service       | Example Configuration                                                                                                                                                                                                                                                                                                                                                                      | Estimated Monthly Cost                  |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Elastic Cloud Server (ECS) | <ul style="list-style-type: none"><li>• Pay-per-use: \$0.05 USD/hour</li><li>• Region: AP-Singapore</li><li>• Billing Mode: Pay-per-use</li><li>• CPU Architecture: x86</li><li>• Type: General computing   s6.medium.2   1 vCPU   2 GB</li><li>• Image: CentOS 7.6 64bit</li><li>• System Disk: High I/O   40 GiB</li><li>• Data Disk: High I/O   100 GiB</li><li>• Quantity: 3</li></ul> | \$0.05 USD x 24 x 30 x 3 = \$108 USD    |
| Elastic IP (EIP)           | <ul style="list-style-type: none"><li>• Pay-per-use: \$0.13 USD/5 Mbit/s/hour</li><li>• Region: AP-Singapore</li><li>• Billing Mode: Pay-per-use</li><li>• Product Type: Dedicated</li><li>• Routing Type: Dynamic BGP</li><li>• Billed By: Bandwidth</li><li>• Bandwidth: 5 Mbit/s</li><li>• Quantity: 3</li></ul>                                                                        | \$0.13 USD x 24 x 30 x 3 = \$270.00 USD |
| Total                      |                                                                                                                                                                                                                                                                                                                                                                                            | \$378.00 USD                            |

# 3 Procedure

---

- [3.1 Preparations](#)
- [3.2 Quick Deployment](#)
- [3.3 Getting Started](#)
- [3.4 Quick Uninstallation](#)

## 3.1 Preparations

### Creating the rf\_admin\_trust Agency

- Step 1** Log in to Huawei Cloud official website, open the [console](#), move your mouse over the account name, and choose **Identity and Access Management**.

**Figure 3-1** Console page

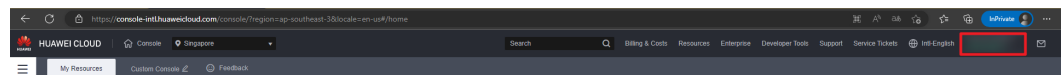
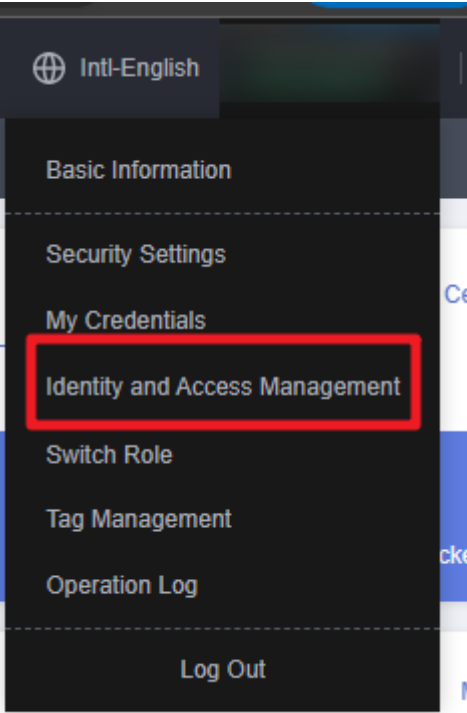
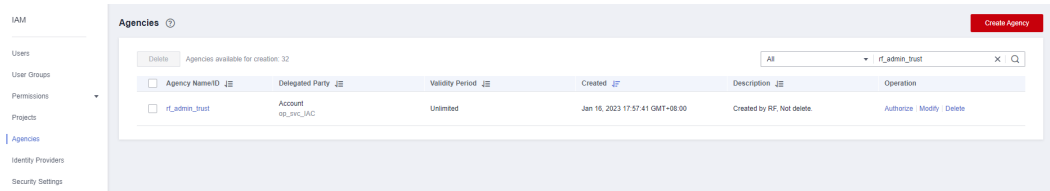


Figure 3-2 Identity and Access Management



**Step 2** Choose **Agencies** in the left navigation pane and search for the **rf\_admin\_trust** agency.

Figure 3-3 Agency list



- If the agency is found, skip the following steps.
- If the agency is not found, perform the following steps to create it.

**Step 3** Click **Create Agency** in the upper right corner of the page. On the displayed page, enter **rf\_admin\_trust** for **Agency Name**, select **Cloud service** for **Agency Type**, enter **RFS** for **Cloud Service**, and click **Next**.

Figure 3-4 Create Agency

Agencies / Create Agency

★ Agency Name

★ Agency Type ☐ Account  
Delegate another HUAWEI CLOUD account to perform operations on your resources.  
☒ Cloud service  
Delegate a cloud service to access your resources in other cloud services.

★ Cloud Service

★ Validity Period

Description

0/255

Step 4 Search for **Tenant Administrator** and select it in the search results.

Figure 3-5 Select Policy

< Authorize Agency

1 Select Policy/Role 2 Select Scope 3 Finish

Assign selected permissions to rf\_admin\_trust1. Create Policy

View Selected (1) Copy Permissions from Another Project

| Policy/Role Name                                                                                                    | Type                  |
|---------------------------------------------------------------------------------------------------------------------|-----------------------|
| <input type="checkbox"/> CME AdministratorAccess<br>Data Model Engine tenant administrator with full permissions.   | System-defined policy |
| <input checked="" type="checkbox"/> Tenant Administrator<br>Tenant Administrator (Exclude IAM)                      | System-defined role   |
| <input type="checkbox"/> CS Tenant Admin<br>Cloud Stream Service Tenant Administrator, can manage multiple CS users | System-defined role   |

Step 5 Select **All resources** and click **OK**.

Figure 3-6 Select Scope

< Authorize Agency

1 Select Policy/Role 2 Select Scope 3 Finish

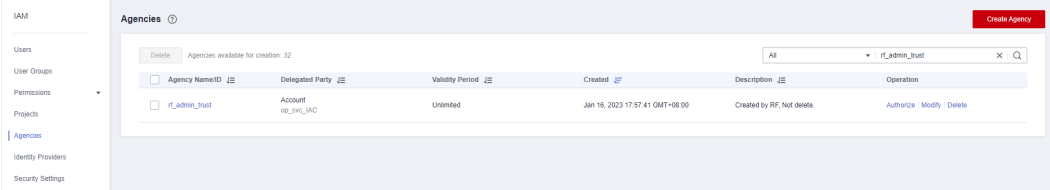
**The following are recommended scopes for the permissions you selected. Select the desired scope requiring minimum authorization.**

Scope

☒ All resources  
IAM users will be able to use all resources, including those in enterprise projects, region-specific projects, and global services under your account based on assigned permissions.  
[Show More](#)

Step 6 Check that the **rf\_admin\_trust** agency is displayed in the agency list.

Figure 3-7 Agency list



-----End

### 3.2 Quick Deployment

This section describes how to deploy the solution.

Table 3-1 Parameter description

| Parameter | Type   | Mandatory | Description                                                                                                                                                                                                                                                                                  | Default Value                          |
|-----------|--------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| vpc_name  | String | Yes       | The prefix of a Virtual Private Cloud (VPC) name. The VPC naming format is {vpc_name}_vpc. This template uses a newly created VPC and the VPC name must be unique. The prefix can contain 1 to 57 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.). | highly-available-rabbitmq-cluster_demo |

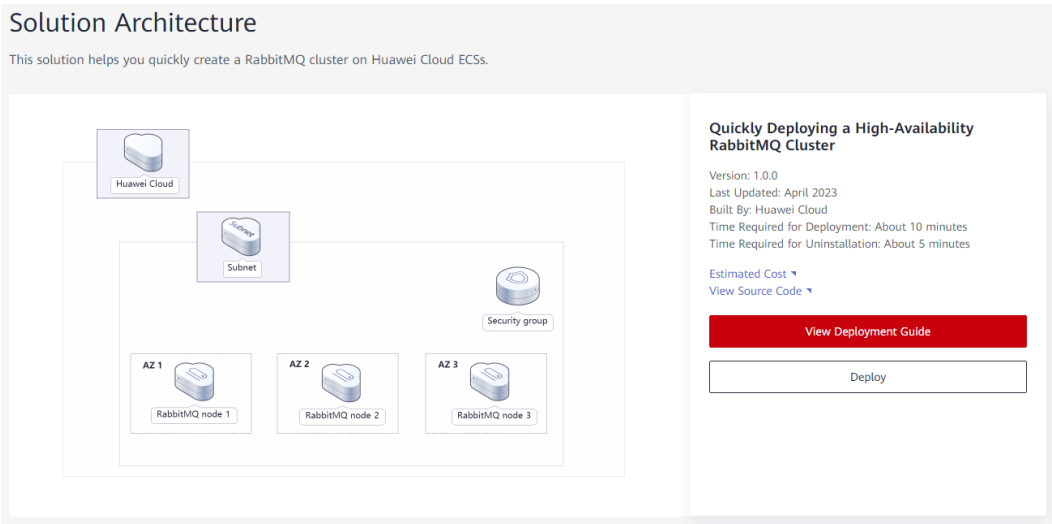
| Parameter     | Type   | Mandatory | Description                                                                                                                                                                                                                                                                                                                                                                                          | Default Value                          |
|---------------|--------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| secgroup_name | String | Yes       | The prefix of a security group name. The security group naming format is {secgroup_name}_secgroup. This template uses a newly created security group. For details about how to configure security group rules, see the <a href="#">(Optional) Modifying Security Group Rules</a> . It can contain 1 to 55 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.). | highly-available-rabbitmq-cluster-demo |
| ecs_name      | String | Yes       | ECS name, which must be unique. The ECSs are named {ecs_name}-node01, {ecs_name}-node02, and {ecs_name}-node03. It can contain 1 to 57 characters and can include letters, digits, and hyphens (-).                                                                                                                                                                                                  | highly-available-rabbitmq-cluster-demo |
| ecs_flavor    | String | Yes       | ECS flavor. For more flavors, see <a href="#">A Summary List of x86 ECS Specifications</a> .                                                                                                                                                                                                                                                                                                         | s6.medium.2                            |

| Parameter        | Type   | Mandatory | Description                                                                                                                                                                                                                                                                                                                                                                                                                                      | Default Value |
|------------------|--------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| ecs_password     | String | Yes       | ECS initial password. After an ECS is created, log in to the ECS console and change the password by referring to <a href="#">Resetting the Password for Logging In to an ECS on the Management Console</a> . It can contain 8 to 26 characters and must include at least three of the following character types: uppercase letters, lowercase letters, digits, and special characters (!@\$%^-_=+[{ }];,./?). The administrator is <b>root</b> . | Left blank    |
| system_disk_size | String | Yes       | System disk size, in GiB. The value ranges from 1 to 1024. The system disk size cannot be scaled down.                                                                                                                                                                                                                                                                                                                                           | 40            |
| data_disk_size   | String | Yes       | Data disk size, in GiB. The value ranges from 10 to 32768.                                                                                                                                                                                                                                                                                                                                                                                       | 100           |
| charging_mode    | String | Yes       | Billing mode. By default, fees are automatically deducted. The value can be <b>prePaid</b> (yearly/monthly) or <b>postPaid</b> (pay-per-use).                                                                                                                                                                                                                                                                                                    | prePaid       |

| Parameter          | Type   | Mandatory | Description                                                                                                                                                                                                                                                                     | Default Value |
|--------------------|--------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| charging_unit      | String | Yes       | The value can be <b>year</b> or <b>month</b> . This parameter is mandatory when <b>charging_mode</b> is set to <b>prePaid</b> .                                                                                                                                                 | month         |
| charging_period    | number | Yes       | When <b>charging_unit</b> is set to <b>year</b> , the value ranges from <b>1</b> to <b>3</b> . When <b>charging_unit</b> is set to <b>month</b> , the value ranges from <b>1</b> to <b>9</b> . This parameter is mandatory when <b>charging_mode</b> is set to <b>prePaid</b> . | 1             |
| eip_bandwidth_size | number | Yes       | EIP bandwidth size. This template uses an EIP billed by bandwidth. The value ranges from 1 Mbit/s to 2000 Mbit/s.                                                                                                                                                               | 5             |
| RabbitMQ_username  | String | Yes       | RabbitMQ username. It can contain 5 to 16 characters and can include letters and digits.                                                                                                                                                                                        | admin         |
| RabbitMQ_password  | String | Yes       | Password of the RabbitMQ user. After the creation is complete, change the password by following the instructions provided in the deployment guide. It can contain 6 to 12 characters and can include letters, digits, and special characters (!@\$#%^-=+.,/?)                   | Left blank    |

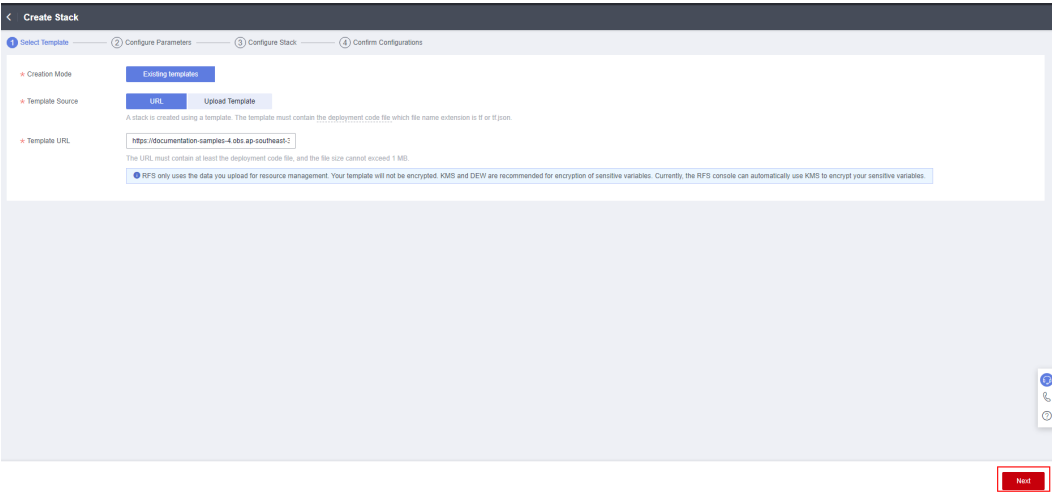
**Step 1** Log in to Huawei Cloud Solution Best Practices, choose **Quickly Deploying a High-Availability RabbitMQ Cluster**, and click **Deploy**.

**Figure 3-8** Selecting a solution



**Step 2** On the **Select Template** page, click **Next**.

**Figure 3-9** Select Template



**Step 3** On the **Configure Parameters** page, enter a stack name, configure parameters according to [Table 3-1](#), and click **Next**.

Figure 3-10 Configure Parameters

| Parameter        | Value                                  | Type   | Description                                                                                                                                                                         |
|------------------|----------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| vpc_name         | highly-available-rabbitmq-cluster_demo | string | VPC name. This template uses a newly created VPC and the VPC name must be unique. It can contain 1 to 52 characters and can include letters, digits, underscores (_), hyphen.       |
| secgroup_name    | highly-available-rabbitmq-cluster_demo | string | Security group name. This template uses a newly created security group. For details about how to configure a security group rule, see the deployment guide. It can contain 1 to 6.  |
| ecs_name         | highly-available-rabbitmq-cluster-demo | string | ECS name, which must be unique. The ECSs are named {ecs_name}-node01, {ecs_name}-node02, or {ecs_name}-node03. It can contain 1 to 57 characters and can include lett.              |
| ecs_favor        | s6.medium.2                            | string | ECS flavor. For more flavors, see the deployment guide. Default: s6.medium.2 (s6   1 vCPU   2 GiB).                                                                                 |
| ecs_password     | *****                                  | string | ECS initial password. After an ECS is created, log in to the ECS console and change the password by referring to the instructions provided in the deployment guide. It can contain. |
| system_disk_size | 40                                     | number | System disk size, in GiB. The value ranges from 1 to 1024. The system disk size cannot be scaled down. Default: 40.                                                                 |

Step 4 On the **Configure Stack** page, select the **rf\_admin\_trust** agency and click **Next**.

Figure 3-11 Configure Stack

Agency: huaweicloud rf\_admin\_trust

Auto-Rollback: ☐ If auto-rollback is enabled, the stack automatically rolls back to the previous successful resource status when the operation fails. After the stack is created, you can modify the stack configurations on its details page.

Deletion Protection: ☐ Deletion protection prevents the stack from being deleted accidentally. You can modify it on the stack details page.

Step 5 On the **Confirm Configurations** page, click **Create Execution Plan**.

Figure 3-12 Confirm Configurations

| Parameter Name   | Value                                  | Type   | Description                                                                                                                                                                    |
|------------------|----------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| vpc_name         | highly-available-rabbitmq-cluster_demo | string | VPC name. This template uses a newly created VPC and the VPC name must be unique. It can contain 1 to 52 characters and can include letters, digits, underscores (_), hy-      |
| secgroup_name    | highly-available-rabbitmq-cluster_demo | string | Security group name. This template uses a newly created security group. For details about how to configure a security group rule, see the deployment guide. It can contain 1   |
| ecs_name         | highly-available-rabbitmq-cluster-demo | string | ECS name, which must be unique. The ECSs are named {ecs_name}-node01, {ecs_name}-node02, or {ecs_name}-node03. It can contain 1 to 57 characters and can include               |
| ecs_favor        | s6.medium.2                            | string | ECS flavor. For more flavors, see the deployment guide. Default: s6.medium.2 (s6   1 vCPU   2 GiB).                                                                            |
| ecs_password     | *****                                  | string | ECS initial password. After an ECS is created, log in to the ECS console and change the password by referring to the instructions provided in the deployment guide. It can co. |
| system_disk_size | 40                                     | number | System disk size, in GiB. The value ranges from 1 to 1024. The system disk size cannot be scaled down. Default: 40.                                                            |
| data_disk_size   | 100                                    | number | Data disk size, in GiB. The value ranges from 10 to 32768. Default: 100.                                                                                                       |
| charging_mode    | postPaid                               | string | Billing mode. Value options: prePaid (yearly/monthly) or postPaid (pay-per-use). Default: postPaid.                                                                            |
| charging_unit    | month                                  | string | The value can be year or month. This parameter is mandatory when charging_mode is set to prePaid. Default: month.                                                              |

**Step 6** In the displayed **Create Execution Plan** dialog box, enter an execution plan name and click **OK**.

**Figure 3-13** Create Execution Plan

Create Execution Plan

- Before deploying a stack, you can create an execution plan to preview the stack information and check its configurations to evaluate the impact on running resources.
- RFS is free of charge, but the resources in the stack are not. After the execution plan is created, a stack (occupies the stack quota) for which no resource is enabled is generated, and the estimated price is displayed in the execution plan details.

★ Execution Plan Name

executionPlan\_20230321\_1650\_29xk

Description

Enter a description of the execution plan.

0/255

OK

Cancel

**Step 7** Wait until the status of the execution plan changes to **Available** and click **Deploy** in the **Operation** column. In the displayed dialog box, click **Execute**.

**Figure 3-14** Execution plan created

< build-a-highly-available-...

Basic Information

Resources

Outputs

Events

Template

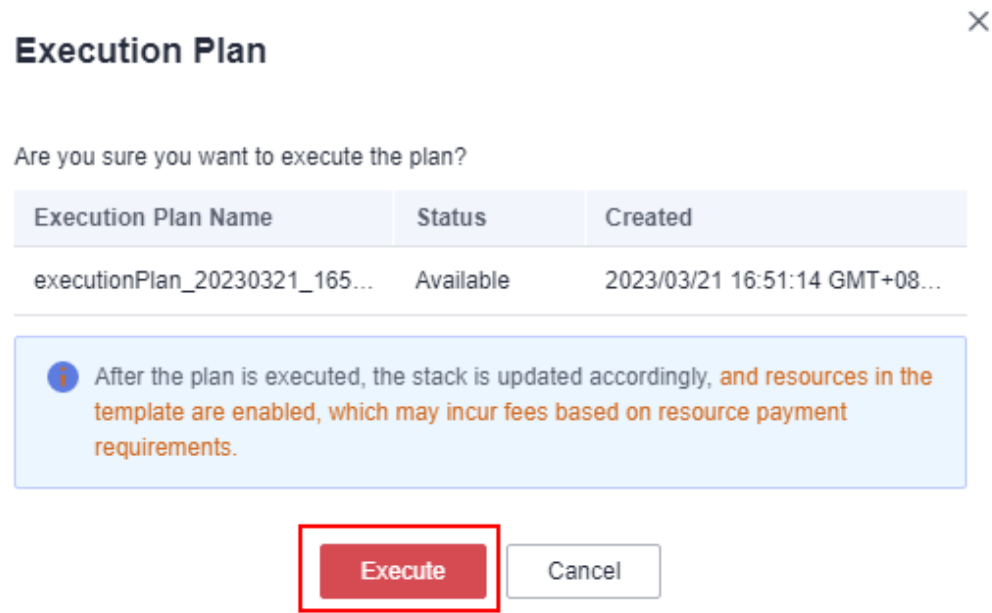
Execution Plans

Delete

Update TemplateParameter

| Execution Plan Name/ID                                                                         | Status    | Estimated Price (¥)          | Created                       | Description | Operation                                     |
|------------------------------------------------------------------------------------------------|-----------|------------------------------|-------------------------------|-------------|-----------------------------------------------|
| <div><div></div>executionPlan_20230321_1650_29xk<br/>3c9e0284-3429-4c3d-81a0-2653e50221c</div> | Available | <a href="#">View Details</a> | 2023/03/21 16:51:14 GMT+08:00 | --          | <div><div>Delete</div><div>Deploy</div></div> |

Figure 3-15 Confirming the execution plan



**Step 8** Wait until automatic deployment is complete, and click the **Events** tab to view details.

Figure 3-16 Resources created

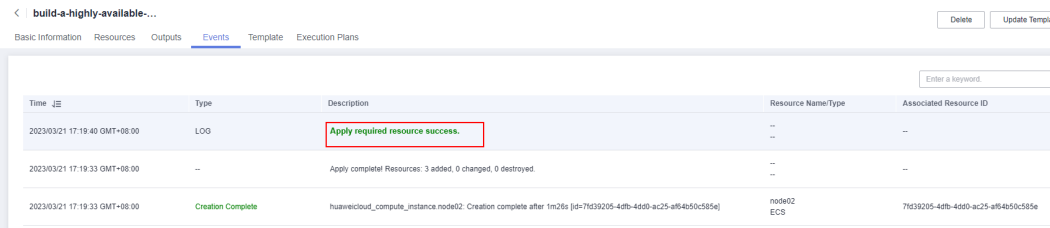
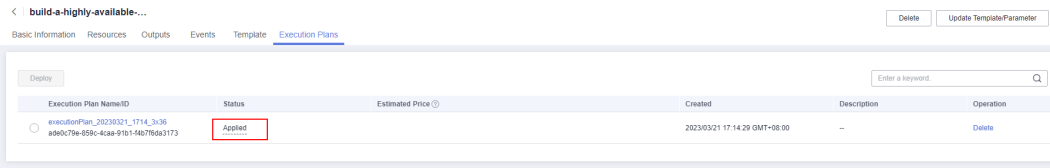


Figure 3-17 Execution plan complete



**Step 9** Click the **Outputs** tab to view information about the VIP and ECSs.

Figure 3-18 Outputs

| Name          | Type   | Value                                                                            | Description |
|---------------|--------|----------------------------------------------------------------------------------|-------------|
| Node_1_access | string | Enter http://190.92.294.170:15672 in the address box of a browser                | --          |
| Node_2_access | string | Enter http://119.8.170.173:15672 in the address box of a browser                 | --          |
| Node_3_access | string | Enter http://119.8.165.233:15672 in the address box of a browser                 | --          |
| Verification  | string | Deployment complete. Verify the deployment by referring to Getting Started in... | --          |

-----End

### 3.3 Getting Started

#### (Optional) Modifying Security Group Rules

NOTICE

- This solution uses port 22 to remotely log in to the ECS. By default, the VPC subnet created in this solution allows access from port 22. Configure an IP address whitelist by referring to [Modifying a Security Group Rule](#).

A security group is a collection of access control rules for cloud resources, such as cloud servers, containers, and databases, to control inbound and outbound traffic. Cloud resources associated with the same security group have the same security requirements and are mutually trusted within a VPC.

You can modify the security group policy, for example, by adding, modifying, or deleting a TCP port, as follows:

- Adding a security group rule: [Add an inbound rule](#) and enable a TCP port if needed.
- Modifying a security group rule: Inappropriate security group settings can be a serious security risk. You can [modify security group rules](#) to ensure the network security of your ECSs.
- Deleting a security group rule: If the source or destination IP address of an inbound or outbound security group rule changes, or a port does not need to be enabled, you can [delete the security group rule](#).

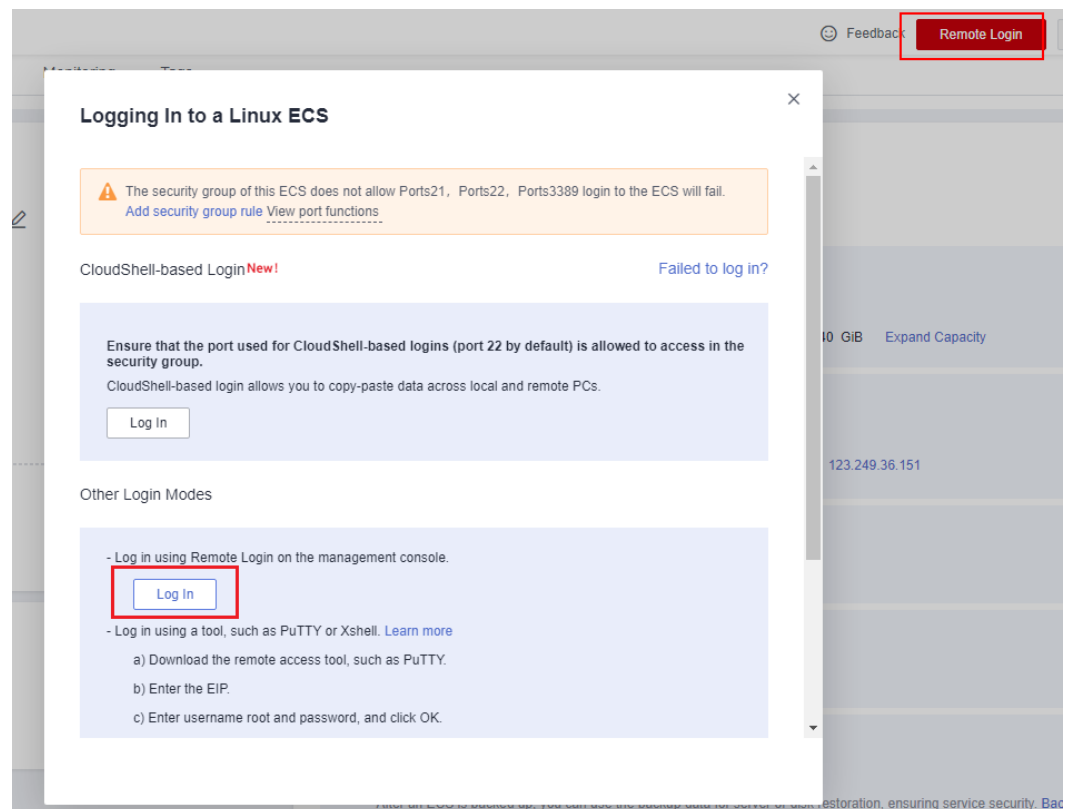
#### (Optional) Changing the RabbitMQ Password

- Step 1** Log in to the [ECS console](#), select any of the ECSs created, and click **Remote Login** or use any other tool to log in to the Linux ECS.

Figure 3-19 ECS console

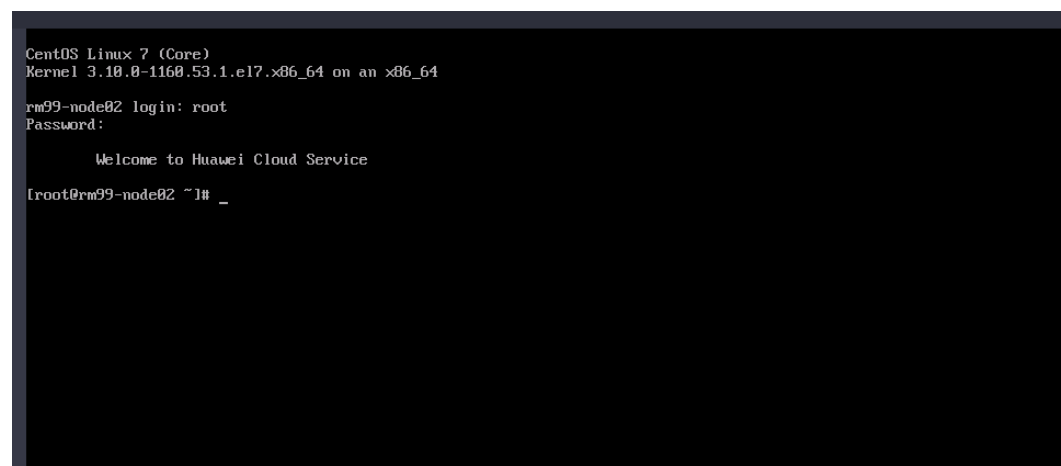
| Name/ID                                                                              | Monitoring | Security | AZ  | Status  | Specifications/Image                          | IP Address                              | Billing Mode                        | Enterprise Project | Tag | Operation                                         |
|--------------------------------------------------------------------------------------|------------|----------|-----|---------|-----------------------------------------------|-----------------------------------------|-------------------------------------|--------------------|-----|---------------------------------------------------|
| highly-available-rabbitmq-cluster-demo-node02<br>7639205-40b-4d8b-ac25-a94e50c555e   |            |          | A23 | Running | 1 vCPU (4   2 GB)   64...<br>CentOS 7.6 64bit | 49.0.202.85 (E1...<br>172.16.0.31 (P... | Pay-per-use<br>Created on Mar 21... | default            | --  | <a href="#">Remote Login</a> <a href="#">More</a> |
| highly-available-rabbitmq-cluster-demo-node03<br>808990b-749e-4a1b-8d49-02b3a20a953  |            |          | A25 | Running | 1 vCPU (4   2 GB)   64...<br>CentOS 7.6 64bit | 94.74.86.114 (...<br>172.16.0.32 (P...  | Pay-per-use<br>Created on Mar 21... | default            | --  | <a href="#">Remote Login</a> <a href="#">More</a> |
| highly-available-rabbitmq-cluster-demo-node01<br>656d7b09-4444-4413-9541-d0a8a9c39c4 |            |          | A21 | Running | 1 vCPU (4   2 GB)   64...<br>CentOS 7.6 64bit | 119.8.169.236...<br>172.16.0.30 (P...   | Pay-per-use<br>Created on Mar 21... | default            | --  | <a href="#">Remote Login</a> <a href="#">More</a> |

**Figure 3-20** Logging in to a Linux ECS



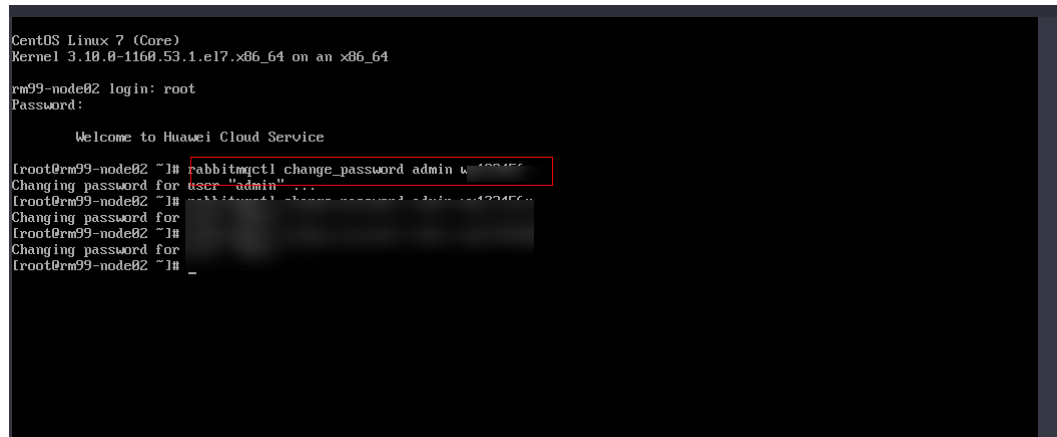
**Step 2** On the ECS, enter the username and password and press **Enter**.

**Figure 3-21** Logging in to an ECS



**Step 3** Run `rabbitmqctl change_password Username New password` to change the password.

### Figure 3-22 Changing the password

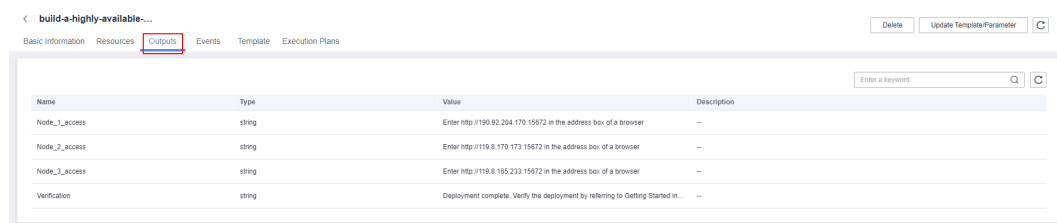


**----End**

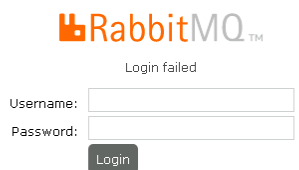
## Verifying Deployment of the RabbitMQ Cluster

**Step 1** Click the **Outputs** tab and select any node.

### Figure 3-23 Outputs



**Figure 3-24** RabbitMQ webpage

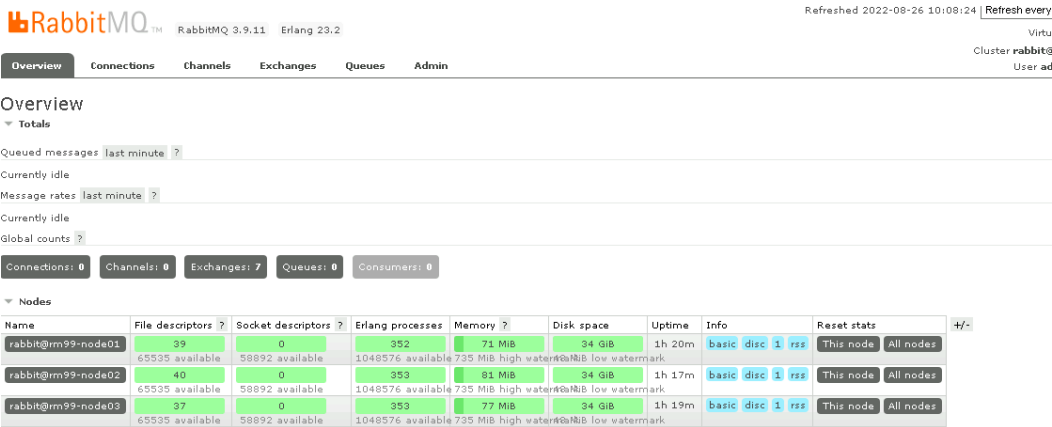


**Step 2** Enter the username and password, and click **Login**.

Figure 3-25 Entering the username and password



Figure 3-26 RabbitMQ cluster page

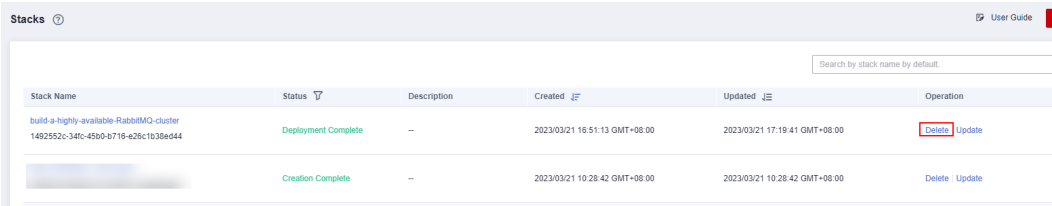


----End

## 3.4 Quick Uninstallation

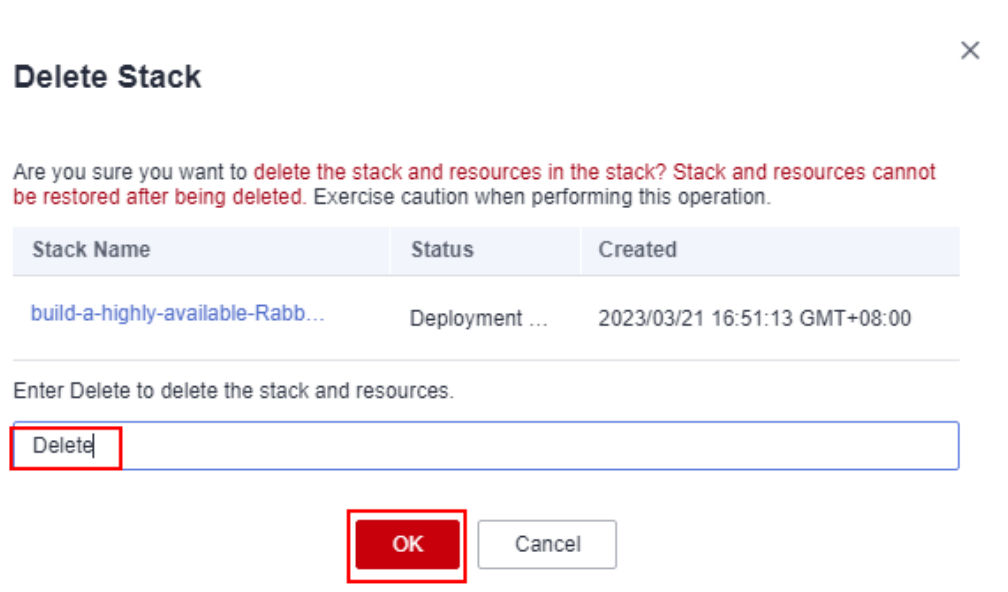
Step 1 Click **Delete** in the row where the solution stack is.

Figure 3-27 Uninstalling the solution



**Step 2** Enter **Delete** and click **OK**.

**Figure 3-28** Confirming the uninstallation



----End

# 4 Appendix

---

## Terms

- **Elastic Cloud Server (ECS):** ECS provides secure, scalable, on-demand compute resources, enabling you to flexibly deploy applications and workloads.
- **Elastic IP (EIP):** EIP provides static public IP addresses and scalable bandwidths that enable your cloud resources to communicate with the Internet. You can easily bind an EIP to an ECS, BMS, virtual IP address, NAT gateway, or load balancer, enabling immediate Internet access.

# 5 Change History

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Table 5-1 Change history

| Released On | Description                               |
|-------------|-------------------------------------------|
| 2023-04-30  | This issue is the first official release. |